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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,068	03/26/2004	Karson L. Knutson	110348-134668	8657

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EXAMINER

FUQUA, SHAWNTINA T

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,068

Applicant(s)

KNUTSON ET AL.

Examiner

Shawntina T. Fuqua

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12, 14-19 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-12, 14-19 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In response to applicant's telephone inquiry of 7/25/05 regarding the last Office action, the following corrective action is taken. Applicant noted that it appeared the Examiner did not consider amendment filed 3/21/05. Upon further inspection, Examiner realized that claim numbers did not correspond to claim numbers in the amendment filed 3/21/05.

The period for reply of 2 MONTHS set in said Office Action is restarted to begin with the mailing date of this letter.

2. A corrected copy of the last Office Action is enclosed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, 5, 11, 12, 14, 15, 21-23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur (US6808758) in view of O'Carroll et al (US6559424) and Champetier et al (US5997175).

Thakur discloses an apparatus/method/system comprising a semiconductor wafer as a target area (22), lamps (27), a reflective device (column 5, lines 1-3), a backside hotplate as a heating device (34), and a system which includes multichambers (column 9, lines 6-14). Thakur does not disclose flash lamps, a plate type reflective device having first and second zones

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wherein each zone has a different reflectivity, and reflector is axis-symmetric around a vertical axis. O'Carroll et al discloses flash lamps (column 3, lines 57-65) and Champetier et al discloses a plate type reflective device (26, 102, 104) having first and second zones wherein each zone has a different reflectivity (column 9, lines 24-38; column 10, lines 7-53), and reflector is axis-symmetric around a vertical axis (Figures 1, 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the lamps and reflector of Thakur with the flash lamps of O'Carroll and the reflector of Champetier et al because, flash lamps and a zonal reflector allow the temperature to be controlled more accurately and allow for a more uniform heating.

5. Claims 4, 16, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur in view of O'Carroll et al and Champetier et al as applied to claims 2, 3, 15, 23, and 25-27 above, and further in view of Lee et al (US6753272).

Thakur in view of O'Carroll et al and Champetier et al discloses all of the recited subject matter except a heating plate with independently controlled zones. Lee et al discloses a heating plate with independently controlled zones (40, abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the heating plate with independently controlled zones of Lee et al in the apparatus of Thakur along with the flash lamps O'Carroll et al and the different reflectivity of Champetier et al because, independently controlled zones allows the wafer to be uniformly heated and prevents slip line formations.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur in view of O'Carroll and Champetier et al as applied to claims 5 and 26 above, and further in view of Liu et al (US6385396).

Thakur in view of O'Carroll et al and Champetier et al discloses all of the recited subject matter except concentric reflecting zones symmetric around a vertical axis. Liu et al discloses concentric reflecting zones (6, 7, 8) symmetric around a vertical axis (Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have concentric reflecting zones as taught by Liu et al in the apparatus of Thakur along with the flash lamps of O'Carroll et al and the different reflectivity of Champetier et al because, concentric reflecting zones allows for a more uniform heating.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur in view of O'Carroll et al and Champetier et al as applied to claim 25 above, and further in view of Gat et al (US6771895).

Thakur in view of O'Carroll et al and Champetier et al discloses all of the recited subject matter except a gold reflector. Gat et al discloses using gold as a reflector (column 4, lines 38-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included gold as a reflector as taught by Gat et al in the apparatus of Thakur along with the flash lamps of O'Carroll et al and the different reflectivity of Champetier et al because, a gold reflector allows the wafer to be heated more uniformly.

8. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur in view of O'Carroll and Champetier et al as applied to claim 25 above, and further in view of Grant et al (US5228206).

Thakur in view of O'Carroll et al and Champetier et al discloses all of the recited subject matter except a xenon flash lamp. Grant et al discloses a xenon flash lamp (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have

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included a xenon flash lamp in the apparatus of Thakur along with the flash lamps of O'Carroll et al and the different reflectivity of Champetier et al because, a xenon flash lamp allows the substrate to be heated more efficiently.

9. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thakur in view of O'Carroll et al and Champetier et al as applied to claims 15 and 26 above, and further in view of Noguchi (US5219786).

Thakur in view of O'Carroll et al and Champetier et al discloses all of the recited subject matter except activating implanted ions by heating the second surface to a pre-flash temperature below ion diffusion and heating a first surface to a temperature between ion diffusion and substrate melting by light rays from a flash lamp and the first surface is above the ion diffusion temperature for a time period of three milliseconds or less. Noguchi discloses activating implanted ions by heating the second surface to a pre-flash temperature below ion diffusion and heating a first surface to a temperature between ion diffusion and substrate melting by light rays from a flash lamp and the first surface is above the ion diffusion temperature for a time period of three milliseconds or less (column 2, line 31-column 3, line 60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the activating implanted ions heating method of Noguchi in the apparatus of Thakur along with the flash lamps of O'Carroll et al and the different reflectivity of Champetier et al because, activating implanted ions by heating the second surface to a pre-flash temperature below ion diffusion and heating a first surface to a temperature between ion diffusion and substrate melting by light rays from a flash lamp and the first surface is above the ion diffusion temperature for a time period of three milliseconds or less allows a semiconductor layer to be formed on the substrate at a relatively

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high temperature while the substrate carrying the layer is heated at a temperature that will not cause adverse effects on the substrate.

Response to Arguments

10. Applicant's arguments with respect to claims 2-12, 14-19, and 21-27 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawntina T. Fuqua whose telephone number is (571) 272-4779. The examiner can normally be reached on Monday-Friday 8-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

stf
September 16, 2005


Shawntina Fuqua
Patent Examiner
Art Unit 3742